

REMARKS

Claims 1-5, 7-10, 12-15, and 17-29 are now pending in the application. The amendments to the claims contained herein are of equivalent scope as originally filed and, thus, are not a narrowing amendment. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. §§ 102 AND 103

Claims 2, 3, 5, 17, 18, and 29 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Voss et al (U.S. Pat. No. 6,106,964). This rejection is respectfully traversed.

Claims 7, 8, 12, 13, 21-23, 27, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Voss et al (U.S. Pat. No. 6,106,964). This rejection is respectfully traversed.

Claims 4, 9, 14, 10, 15, 19, 20, and 24-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Voss et al (U.S. Pat. No. 6,106,964) in view of Kanai et al (U.S. Pub. No. 2001/0021468). This rejection is respectfully traversed.

With regard to independent claims 2, 17, and 21, Applicants submit that each of these claims includes the limitation of the valve being one of a “restriction valve and a throttle valve.” Applicants submit that a restriction valve is one that is capable of being opened and/or closed partially in order to provide a restriction on flow therethrough, but still allowing a plurality of different sized flow passages therethrough. The term “restriction valve” is a term of art. Similarly, the term “throttle valve” is also a term of art and is used generally to indicate a flat plate or disk that is hinged on opposite sides so it

can be flip open or closed and can be held at a plurality of intermediate positions for varying the amount of flow that is allowed to pass through the valve.

Contrary to the restriction valve and the throttle valve, as claimed, the valve members 160 disclosed in Voss et al '964 are valves that are either completely open or completely closed. Therefore, the valves 160 are neither restriction valves nor throttle valves according to their normal meaning within the art. This interpretation of the valves 160 is consistent with the specification of the Voss et al '964 patent in that col. 9, lines 36-45 indicate that "an optional reactant supply bypass path valve 150 and valves 160 (alternatively, a single three-way valve) may be included so that the reactant stream can be supplied to the fuel cell stack without passing through the CHHE module 200. This may be advantageous, for example, prior to system shut-down when it may be beneficial to purge the stack 100 with dry oxidant gas, or periodically during operation, for example, if flooding of the electrodes occurs." Applicants submit that there is no teaching or suggestion in the Voss et al '964 reference for having the valves being partially opened, but instead, the valves are clearly indicated as being either fully opened or fully closed in two discrete positions. In fact, there is no mention in the disclosure of Voss et al '964 for the possibility of having both valves 160 in an open state simultaneously. The Examiner asserts that "with respect to valve 160 being a restriction valve, is considered to be an inherent property of the valve as set forth in the prior art, because Voss teaches that valve 160 can cut off flow to the humidifier, and supply dry gas directly to the fuel cell stack." However, Applicants submit that this interpretation is improper in view of the teaching of Voss et al '964 which merely teaches a valve that is either in an opened or a closed state and makes no mention of

maintaining either valve in an intermediate position so as to act as a flow restrictor valve or as a throttle valve. Therefore, Applicants respectfully submit that the rejection of claims 2, 17, and 21 is improper and reconsideration and withdrawal of these rejections are respectfully requested.

With regard to claims 3, 8, 13, 18, and 23, Applicants note that each of these claims include limitations directed to a proportional valve openable to a plurality of positions including a fully open position, a fully closed position, and a plurality of intermediate partially closed positions for controlling the “proportion” of gas flowing from said gas supply through said humidifier. In the system disclosed in Voss et al ‘964, it is clear that only two modes of operation are anticipated. The first mode is with all of the flow of reactant gas passing through the humidifier 200, and the second mode is with all of the flow passing through bypass path 150 via control of valves 160 to an open or closed position. There is no mention in the disclosure of Voss et al ‘964 of the desirability or possibility of controlling the proportion of gas flowing from the gas supply through the humidifier, as claimed. The Examiner asserts that “a valve that completely opens and closes, is capable of partial opening and closing, which would inherently proportion the amount of gas through the bypass line and humidifier. Specifically, if one valve is completely open and the other valve is partially open, then the partially open valve would have a simultaneously effect.” However, Applicants submit that the Examiner’s rationale is not based upon any support that is present in Voss et al ‘964, but is instead based upon the Examiner’s own hindsight interpretation after reviewing Applicants’ teachings. It is clear from the disclosure of Voss et al ‘964 that the valves 160 are each intended to be of the type that is either completely open or completely

closed. What is even more clear is that there is no teaching or suggestion of having both valves 160 in a simultaneously open condition, with the disclosure of Voss et al '964, configured so as to allow complete flow through the humidifier 200 or, alternatively, complete flow through the bypass path 150. Therefore, Applicants respectfully submit that the Examiner has taken a position that is contrary to the express teachings of Voss et al '964 and therefore, reconsideration and withdrawal of this rejection are respectfully requested.

With respect to independent claims 4, 9, 14, 19, and 24, it is noted that each of these claims include limitations directed to "a humidity sensor for generating a humidity signal based on the humidity of gas entering the fuel cell stack; and a controller connected to said humidity sensor and said valve for controlling said valve based on said humidity signal." Applicants submit that neither Voss et al '964 nor Kanai et al '468 teach or suggest a valve for controlling the flow through either a bypass line or through a humidifier that is controlled by a controller that is connected to a humidity sensor and the valve for controlling the valve based upon a humidity signal. In particular, Voss et al '964 fails to disclose any controller or humidity sensor. With regard to Kanai '468, the Examiner asserts that "Kanai teaches that it is conventional to employ a humidity sensor and controller to adjust the amount of water and air supply to the fuel cell (228) in order to prevent insufficient amounts of humidification during normal operation of the fuel cell (1050)." However, there is no teaching or suggestion in either Voss et al '964 or Kanai et al '468 for using a controller connected to the valves 160 for controlling the state of the valves in response to a sensor signal. Applicants have carefully reviewed the Kanai '468 publication and have not been able to locate reference numeral 228 referred to by

the Examiner and furthermore, do not believe that paragraph [00150] supports the Examiner's assertion in any way. Applicants request clarification of these references set forth by the Examiner. Nonetheless, Applicants submit that it is only through hindsight that the Examiner can make the alleged combination of Voss et al '964 and Kanai et al '468 for controlling the valves 160 in response to a humidity signal based on the humidity of gas entering the fuel cell stack. Therefore, reconsideration and withdrawal of this rejection are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: Oct. 19, 2004

By: Ryan W. Massey
Ryan W. Massey, Reg No. 38,543

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600